



# Emerging drifts big data analytics and environment sustainability (EBAES)

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This special issue explores critical research themes at the intersection of emerging technologies and environmental sustainability. It highlights the transformative potential of innovations such as Big Data Analytics, Artificial Intelligence (AI), and the Internet of Things (IoT) in advancing global ecosystem improvement.

Grounded in the Triple Bottom Line (TBL) paradigm, the issue addresses key sustainability challenges, including climate change, dwindling water resources, declining water quality, greenhouse gas (GHG) emissions in wetlands, and more. In response to these pressing concerns, this edition focuses on the role of big data in tackling climate change, promoting environmental sustainability, and managing wetlands effectively.

Key areas of interest include modelling and measuring natural water resources, assessing GHG emissions, evaluating environmental factors, improving water quality, and enhancing supply chain sustainability through AI and IoT applications. These technologies, coupled with innovative approaches, offer promising pathways to mitigate global warming and foster sustainable competitive advantage.

With this vision, the call invites researchers worldwide to contribute original, high-quality research and engage in

meaningful discourse. Researchers are encouraged to submit both empirical and conceptual studies to advance our collective understanding of how emerging technologies can be leveraged for a more sustainable future. Topics of interest include, but are not limited to:

- Big Data in Climate Change and Environmental Sustainability
- Applications of AI and IoT in Sustainability
- Supply Chain Sustainability
- Carbon Footprint Analysis and Reduction
- Management of Natural Water Bodies and Wetlands
- Big Data Analytics for Carbon Emission Justification
- Measuring Water and Surface Water Quality
- Modelling GHG Emissions and Sustainability Practices
- Multi-criteria and Multivariate Methods in Sustainability Evaluation

The guest editors of this special issue—Prof. Ashok Kumar Singh, Dr. Rupesh Kumar, and Dr. Deepak Bangwal—have meticulously curated a collection of high-impact research papers that delve into critical emerging technologies and sustainable practices. These studies illuminate innovative solutions and methodologies to address global environmental and sustainability challenges.

Kumar et al. (2023) provided a comprehensive analysis of GHG emissions from renewable energy sources, particularly hydroelectric reservoirs, focusing on methodological frameworks, interdependencies among influencing parameters, and advanced mitigation techniques. Sahu et al. (2023) developed an integrative framework for assessing circular economy performance, leveraging a sustainable balanced scorecard encompassing dimensions such as internal processes, learning and growth, customer engagement, financial metrics, and socio-environmental perspectives. Agrawal et al. (2023) explored the drivers of digitalization pivotal to fostering sustainable practices aligned with achieving a net-zero economy. Mehtab et al. (2023) introduced an innovative

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approach for fabricating biochar nanohybrid-derived photocatalytic plates with exceptional efficiency in degrading congo red dye, offering a transformative solution in waste remediation. Singhal et al. (2023) proposed strategies for converting fabric waste into high-value products, emphasizing chemical pathways to produce cellulose, sugar, and composite materials—advancing sustainable development. Finally, Agrawal et al. (2023) conducted an empirical longitudinal analysis of the financial performance of sustainability-reporting versus non-reporting companies from a stakeholder perspective.

This special issue aggregates cutting-edge advancements in GHG emissions reduction, sustainable development goals, waste management innovations, and performance measurement methodologies in sustainability. The collective insights presented here aim to stimulate further exploration and technological breakthroughs in this pivotal domain.

We extend our heartfelt gratitude to the Editor-in-Chief of Environmental Science and Pollution Research (ESPR), the editorial team, and the supporting staff for facilitating this endeavour. We also deeply appreciate the contributions of the authors and reviewers whose efforts made this special issue a reality. We trust that the research shared here will serve as a catalyst for continued innovation and transformative impact in sustainability and environmental management.

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**Ashok Kumar Singh** Prof. Ashok Kumar Singh is a distinguished academician and researcher with over 40 years of teaching and research experience. He specializes in macrocyclic synthesis, chemical sensors, colorimetric and fluorescent sensors, and environmental studies. Recognized globally, he is listed among the top 2% of scientists worldwide as per Stanford University.

During his illustrious career, Prof. Singh guided 35 PhD scholars and was honoured with the Outstanding Teacher Award at IIT Roorkee. He completed his PhD and postdoctoral research from the Department of Chemistry, Banaras Hindu University, Varanasi. He served at the Indian Institute of Technology Roorkee (formerly the University of Roorkee), making significant contributions to academia and research.



**Rupesh Kumar** Dr. Rupesh Kumar is an accomplished academician and researcher. He earned his PhD from the Department of Management Studies at Indian Institute of Technology (IIT) Roorkee, India, and completed his postdoctoral research at DEG - Departamento Engenharia e Gestão, Instituto Superior Técnico, Lisbon, Portugal. Currently, he serves as an Associate Professor at the Jindal Global Business School, O.P. Jindal Global University, Sonapat, Haryana.

With over 12 years of experience in teaching and research, Dr. Kumar has made significant contributions to the fields of supply chain management, operations management, sustainability, environmental studies, and analytics. His work reflects a commitment to advancing knowledge and addressing global challenges through innovative research.



**Deepak Bangwal** Dr. Deepak Bangwal is an accomplished academician with over 12 years of combined teaching and industry experience. He did his PhD in the area of HR analytics and is currently serving as an Assistant Professor at the University of Petroleum and Energy Studies, Dehradun, India.

Dr. Bangwal's expertise spans HR analytics, green workplace design, AI technology in the workplace, and the tourism and hospitality industry. He possesses extensive knowledge of analytical tools, including structural equation modelling, which he applies to his teaching and research endeavours.